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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,538	04/27/2006	Manish Sharma	CDOT-001	2545

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LAW FIRM OF NAREN THAPPETA
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1725 Jamieson Avenue
ALEXANDRIA, VA 22314

EXAMINER

BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
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2112

NOTIFICATION DATE	DELIVERY MODE
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11/03/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/595,538	Applicant(s) SHARMA ET AL.	
	Examiner Stephen M. Baker	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>050506</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 3, lines 10-12, "the first module may further send an address ..., wherein the data is sent in the data transfer phase" is apparently confusing in that sending an address in an address transfer phase apparently should be described in place of sending data in a data transfer phase, which would also consistent with the first paragraph of the overview.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1: "using a first set of signal lines" is considered vague in the context of the detailed disclosure and apparently should be "using all of a first set of signal lines"; "using said first set of signal lines" is considered vague in the context of the detailed disclosure and apparently should be "using all of said first set of signal lines".

In claim 3: “comprising sending an address of a second module from said first module using said first set of signal lines, wherein said data is sent by said first module to said second module in said data transfer phase” apparently should read as “comprising sending an address of a second module from said first module using said first set of signal lines, wherein said address is sent by said first module to said second module in an address transfer phase” or the like.

In claim 13: “wherein said first module requests access to transmit data on said message bus using said first signal line and transmits a bit of each of a plurality of packets on said first signal line” is ambiguous in that it’s not clear whether it is “data” transmitting that will be “using said first signal line” or it is the “access to transmit” request that will be “using said first signal line.” The disclosure and the other independent claim seem to imply the latter possible interpretation, however both possible interpretations are apparently consistent with the disclosure. The examiner presumes here that latter interpretation is intended, and accordingly the above-cited passage apparently should read as “wherein said first module uses said first signal line to request access to transmit data on said message bus and also transmits a bit of each of a plurality of packets on said first signal line” or the like, to remove the ambiguity.

In claim 21: “asserting” apparently should be “asserts” and “said uncorrectable error” apparently should be “an uncorrectable error” as the error need not necessarily affect the same bits

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,734,909 to Bennett *et al* ("Bennett").

Bennett discloses considerations in designing busses placed between VLSI chips, more particularly considerations in generating a scheme for interconnecting various VLSI chips with an optimized bus architecture selected from a set of optimized bus architectures. As noted by Bennett (column 19, lines 17-25 and elsewhere) it is sometimes necessary for the same bus pins to be used for carrying arbitration signals, address signals and data signals, which is referred to as "pin multiplexing." Bennett also shows (Fig. 25a) such a "pin multiplexed" arrangement wherein there is a first interval ("first duration") for arbitration control signaling, a following interval for address signaling (ID/function), and a subsequent interval ("second duration") for data signaling. Bennett further discloses distributed arbitration between multiple master devices competing for bus ownership (column 17, line 55 through column 18). Accordingly Bennett teaches a "method of operating a message bus serving to transfer data between a plurality of modules, said plurality of modules being connected to said message bus, said method comprising: using a first set of signal lines to send control signals in a first duration, said first set of signal lines being comprised in said message

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bus; and using said first set of signal lines to send data bits between said plurality of modules in a second duration.”

Regarding claim 2, the above-cited passages regarding distributed arbitration further support that Bennett’s “first duration” represents “an arbitration phase in which one or more of said plurality of modules request for ownership of said message bus using said first set of signal lines, and wherein said second duration represents a data transfer phase in which a first module allocated said message bus transfers data on said message bus using said first set of signal lines.”

Regarding claim 3, the above-cited drawing 25a and related description by Bennett further demonstrate that Bennett teaches “sending an address of a second module from said first module using said first set of signal lines, wherein said data is sent by said first module to said second module in said data transfer phase and wherein said second module is also contained in said plurality of modules.”

Regarding claim 4, Bennett furthermore teaches (column 18, lines 17-18) using a single line for arbitration requests, and thus teaches an embodiment wherein “said first set of signal lines comprise one of a request line on which said first module requests said message bus for transmission of data and a grant line on which said first module is indicated that said message bus has been granted”

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,459,840 to Isfeld *et al* (“Isfeld”).

Isfeld discloses a high-performance bus with an arbitration phase, an address phase, and a data phase, all three phases sharing the same signal lines (abstract).

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Arbitration disclosed by Isfeld is accomplished by using a distributed arbitration scheme (abstract). Accordingly, Isfeld discloses a “method of operating a message bus serving to transfer data between a plurality of modules, said plurality of modules being connected to said message bus, said method comprising: using a first set of signal lines to send control signals in a first duration, said first set of signal lines being comprised in said message bus; and using said first set of signal lines to send data bits between said plurality of modules in a second duration.”

7. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,459,840 to Isfeld *et al* (“Isfeld”).

Isfeld discloses a high-performance bus with an arbitration phase, an address phase, and a data phase, all three phases sharing the same signal lines (abstract). Arbitration disclosed by Isfeld is accomplished by using a distributed arbitration scheme (abstract). Accordingly, Isfeld discloses a “method of operating a message bus serving to transfer data between a plurality of modules, said plurality of modules being connected to said message bus, said method comprising: using a first set of signal lines to send control signals in a first duration, said first set of signal lines being comprised in said message bus; and using said first set of signal lines to send data bits between said plurality of modules in a second duration.”

8. Claims 1-4 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,393,500 to Thekkath (“Thekkath”).

Thekkath discloses a computer bus wherein request and grant lines can be replaced by packets sent on data lines (column 10, lines 10+). Arbitration disclosed by

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Thekkath is centralized, including an “arbitration module” 104, and other modules 106-110. Accordingly, Thekkath discloses a “method of operating a message bus serving to transfer data between a plurality of modules, said plurality of modules being connected to said message bus, said method comprising: using a first set of signal lines to send control signals in a first duration, said first set of signal lines being comprised in said message bus; and using said first set of signal lines to send data bits between said plurality of modules in a second duration” and a “system comprising: a message bus containing a plurality of signal lines including a first signal line; a first module and a second module sharing said message bus to transfer data to each other, an arbitration module allocating said message bus to one of said first module and said second module, wherein said first module requests access to transmit data on said message bus using said first signal line and transmits a bit of each of a plurality of packets to said second module on said first signal line.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thekkath.

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Thekkath discloses a priority arbitration scheme (column 7) for arbitration, but does not mention providing more than one module with the same priority and using LRU for arbitrating between two modules with the same priority. Official Notice is taken that priority schemes in which more than one requester has the same priority level and wherein LRU is used for arbitrating between two modules with the same priority were conventional at the time for priority arbitration schemes. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Thekkath's priority arbitration scheme with more than one requester having the same priority level and wherein LRU is used for arbitrating between two modules with the same priority. Such an implementation would have been obvious because priority schemes in which more than one requester has the same priority level and wherein LRU is used for arbitrating between two modules with the same priority were already conventional at the time.

Allowable Subject Matter

11. Claims 5-11 and 14-21 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen M. Baker/
Primary Examiner
Art Unit 2112

smb